

What is claimed is:

1. A wind energy extraction apparatus comprising one or more concentrator wings that react with the flow of wind to induce a drop in static air pressure that is then used to drive an impellor and power converter; and a flow regulator means having aerodynamic surfaces that direct the flow of wind entering a turbine shroud and impinging upon said flow regulator means outwards from a central axis running approximately parallel with the direction of said wind entering said turbine shroud and concentric with said concentrator wings.

2. The apparatus of claim 1 further comprising an aerobrake means such that the proximity of said turbine shroud to said flow regulator means is adjusted such that during overly high velocity wind conditions said proximity will be reduced so as to impede or restrict the flow of wind through said turbine shroud.

3. The apparatus of claim 2 wherein said power converter is installed on the downwind side of said aerodynamic surfaces of said flow regulator means; and further comprising an impellor driveshaft connecting said impellor to said power converter, said impellor driveshaft extending out of said flow regulator means and positioning said impellor within the flow of wind passing through said turbine shroud.

4. The apparatus of claim 3 further comprising a downwind guidance means for supporting a plurality of elements, said downwind guidance means presenting little obstruction to the higher speed wind flow upstream of said elements, said downwind guidance means facilitating the orientation of said elements approximately into the oncoming wind and said downwind guidance means comprising a lee support means that supports said elements and extends in a downwind direction then turns outward from said central axis and connects with a swivel means that allows said elements to rotate around a common axis and effect said orientation.

5 5. The apparatus of claim 1 further wherein said power converter is installed on the downwind side of said aerodynamic surfaces of said flow regulator means; and further comprising an impellor driveshaft connecting said impellor to said power converter, said impellor driveshaft extending out of said flow regulator means and positioning said impellor within the flow of wind passing through said turbine shroud.

5 6. The apparatus of claim 5 further comprising a downwind guidance means for supporting a plurality of elements, said downwind guidance means presenting little obstruction to the higher speed wind flow upstream of said elements, said downwind guidance means facilitating the orientation of said elements approximately into the oncoming wind and said downwind guidance means comprising a lee support means that supports said elements and extends in a downwind direction then turns outward from said central axis and connects with a swivel means that allows said elements to rotate around a common axis and effect said orientation.

5 7. The apparatus of claim 1 further comprising a downwind guidance means for supporting a plurality of elements, said downwind guidance means presenting little obstruction to the higher speed wind flow upstream of said elements, said downwind guidance means facilitating the orientation of said elements approximately into the oncoming wind and said downwind guidance means comprising a lee support means that supports said elements and extends in a downwind direction then turns outward from said central axis and connects with a swivel means that allows said elements to rotate around a common axis and effect said orientation.

5 8. A method for extracting energy from wind, comprising the steps of:
causing wind to flow over one or more concentrator wings and thereby inducing a drop in static air pressure;
using said drop in static pressure to draw a flow of wind into a turbine shroud;
using said flow of wind to drive an impellor;

directing said flow of wind exiting said turbine shroud and impinging onto the aerodynamic surfaces of a flow regulator means outwards from a central axis running approximately parallel with the direction of said flow of wind and concentric with said concentrator wings.

9. The method of claim 8 further comprising:

adjusting the proximity of said turbine shroud to said flow regulator means such that during overly high wind conditions said proximity will be reduced so as to impede or restrict the said flow of wind through said turbine shroud.

10. The method of claim 9 further comprising:

locating a power converter on the downwind side of said aerodynamic surfaces of said flow regulator means;

connecting said impellor to an impellor driveshaft;

5 extending said impellor driveshaft out of said flow regulator means;

locating said impellor within the said flow of wind drawn into said turbine shroud.

11. The method of claim 9 further comprising:

supporting at least elements of said concentrator wings and said turbine shroud by use of a lee support means that extends in a downwind direction then turns outward from said central axis and connects with a swivel means that allows said elements to rotate around
5 a common axis to align appropriately into the wind.

12. The method of claim 8 further comprising:

locating a power converter on the downwind side of said aerodynamic surfaces of said flow regulator means;

connecting said impellor to an impellor driveshaft;

5 extending said impellor driveshaft out of said flow regulator means;

locating said impellor within the said flow of wind drawn into said turbine shroud.

13. The method of claim 12 further comprising:

supporting at least elements of said concentrator wings and said turbine shroud by use of a lee support means that extends in a downwind direction then turns outward from said central axis and connects with a swivel means that allows said elements to rotate around
5 a common axis to align appropriately into the wind.

14. The method of claim 8 further comprising:

supporting at least elements of said concentrator wings and said turbine shroud by use of a lee support means that extends in a downwind direction then turns outward from said central axis and connects with a swivel means that allows said elements to rotate around
5 a common axis to align appropriately into the wind.